

XXV. NOTES ON CRUSTACEA DECAPODA
IN THE INDIAN MUSEUM.

XIII. THE INDIAN SPECIES OF *MACROPHTHALMUS*.

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Plate XXIV.

Since Alcock published his account of the Indian species of *Macrophthalmus* in 1900¹ a considerable amount of additional material has been obtained from various sources. A number of species not hitherto known from Indian waters have been added to the list, while several which were known to Alcock only by name have been rediscovered.

In determining the species I have derived great assistance from Dr. Tesch's recent monograph of the genus.² This work contains a most valuable key to twenty-five species, critical notes on their characters and synonymy and a great number of figures. I have found myself in complete agreement with Tesch as regards the species recognised by him, but I differ from him, and from other recent authorities also, in my views on the position of the species usually termed *Euplax bosci*.

The genus *Euplax* was established by Milne-Edwards for the reception of certain species which he found to differ from typical *Macrophthalmus* in the squarer outline of their carapace, in their shorter eyestalks and in the shortness of the chelipeds in both sexes. During the sixty years that have intervened since Milne-Edwards wrote, numbers of additional species have been described, referred for the most part to *Macrophthalmus*, and nowadays it is no longer possible to form two distinct groups on the characters on which he based his generic distinction.

Tesch, in his account of the Grapsoid crabs collected by the 'Siboga' expedition³, distinguishes *Euplax* from *Macrophthalmus* by other characters: by the extent of the gape between the external maxillipeds and by the proportions of the merus of those appendages. In these respects, however, the difference is sometimes so very slight that it is clear that they do not afford a basis for generic differentiation.

¹ Alcock, *Journ. Asiatic Soc. Bengal*, LXIX, p. 375 (1900).

² Tesch, *Zool. Meded. Rijks Mus. Nat. Hist. Leiden*, I, pp. 149-204, pls. v-ix (1915).

³ Tesch, *Decap. Brachyur. 'Siboga' Exped.*, XXXIX c, p. 57 (1918).

Unfortunately it is not at present possible to include *Euplax* definitely in the synonymy of *Macrophthalmus*, for *E. leptophthalma* from Chili, the type species of the former genus, has never been re-examined since Milne-Edwards described it; there is thus a possibility that it may possess characters, hitherto overlooked, which entitle it to generic recognition. There is, however, very little doubt that *E. boscii* must be regarded as a species of *Macrophthalmus*, to which genus both Audouin and Krauss referred it. In his notes on the species Tesch remarks¹ that the proportional length of the merus of the outer maxillipeds in relation to the ischium is variable. This variation also extends to the relative length and breadth of the merus; the segment is sometimes nearly as long as broad, sometimes as much as one sixth broader than long. In this respect it is not possible to draw a distinction between *E. boscii* and such species as *Macrophthalmus erato* and *M. pacificus*.

E. boscii, moreover, as Tesch has noted², is so very closely related to *Macrophthalmus crinitus*, Rathbun, that the two forms can only with difficulty be distinguished from one another (see p. 391). There can be no possible doubt that the two species are congeneric, yet no one has suggested that *M. crinitus* should be referred to *Euplax*. In both species the gape of the outer maxillipeds is a little wider than in normal *Macrophthalmus* and the front proportionately broader. But the former distinction is a trivial one and the difference, on comparison with *M. pacificus*, is very small; in the latter the species merely takes a place at one end of an evenly graded series.

The position of the Australian species, described by Milne-Edwards as *Cleistostoma tridentatum* and recently referred to the genus *Euplax* by Miss Rathbun and Tesch, seems to require further investigation. On comparison with *Hemiplax hirtipes* from New Zealand I find many points of resemblance. The two species agree with one another and differ from all *normal* species of *Macrophthalmus* in three characters:—(i) the front is extremely broad, its breadth between the eyestalks being considerably more than one third that of the carapace, (ii) the sides of the front are strongly convergent anteriorly, and (iii) there are no enlarged teeth on the fingers of the male cheliped. It appears to me therefore that *C. tridentatum* should be referred to Heller's *Hemiplax*; but the distinctions between this genus and *Macrophthalmus* are by no means convincing and it will perhaps be better to regard the former merely as a subgenus of the latter.

At the present moment two broad-fronted Australian species of *Macrophthalmus*, *M. punctulatus*, Miers and *M. latifrons*, Haswell, are known to us only from the original descriptions. When these have been rediscovered we shall probably be better able to decide on the position of *C. tridentatum* and on the validity of *Hemiplax*.

¹ Tesch, *loc. cit.*, 1918, p. 60.

² Tesch, *loc. cit.*, 1915, p. 192.

Excluding three species altogether unrecognisable from the published descriptions, Tesch recognised twenty-six species of *Macrophthalmus* in his monograph ; to these may be added *M. bosci*, Sav. & Aud., *M. sandakani*, Rathbun, *M. gasrodes*, Kemp and *M. teschi* described in this paper. The total number of species, including the somewhat doubtful *M. latifrons*, Haswell and *M. punctulatus*, Miers, is consequently thirty.

Alcock in his account of the Indian Catometopes described seven species of the genus and mentioned the names of four others which were said to occur in Indian seas. The total number of Indian forms now stands at fifteen. The species are :—

SPECIES.	SYNONYMS.
<i>M. pectinipes</i> , Guérin.	<i>M. simplicipes</i> , Guérin.
<i>M. transversus</i> (Latreille).	
<i>M. telescopicus</i> (Owen).	<i>M. compressipes</i> , Randall. <i>M. podophthalmus</i> , Souleyet. <i>M. verrauxi</i> , Milne-Edwards.
<i>M. latipes</i> , Borradaile.	
<i>M. sulcatus</i> , Milne-Edwards.	
<i>M. brevis</i> (Herbst).	<i>M. carinimanus</i> , Milne-Edwards.
<i>M. convexus</i> , Stimpson.	<i>M. inermis</i> , A. Milne-Edwards.
<i>M. erato</i> , de Man.	
<i>M. latreillei</i> , Desmarest.	<i>M. desmaresti</i> , Lucas. <i>M. serratus</i> , Gray. <i>M. polleni</i> , Hofmann. <i>M. laniger</i> , Ortmann. <i>M. bicarinatus</i> , Heller.
<i>M. pacificus</i> , Dana.	
<i>M. tomentosus</i> , Souleyet.	<i>M. affinis</i> , Guérin.
<i>M. depresso</i> , Rüppell.	
<i>M. teschi</i> , sp. nov.	
<i>M. gasrodes</i> , Kemp.	
<i>M. crinitus</i> , Rathbun.	

Of these I have seen all but *M. latipes* and *M. latreillei*.

Macrophthalmus pectinipes, Guérin.

1900. *Macrophthalmus pectinipes*, Alcock, *Journ. Asiat. Soc. Bengal*, LXIX,
p. 377.
1915. *Macrophthalmus pectinipes*, Tesch, *Zool. Meded. Mus. Leiden*, I,
p. 156.

I agree with Tesch that Guérin's *M. simplicipes* is probably founded on a young varietal form of this species.

No additions have been made to the specimens examined by Alcock. The record from Orissa is based on a large male labelled "Cuttack. Dr. F. Stoliczka." This appears to be an error, for the original label, also found with the specimen, clearly reads "Kutch."

M. pectinipes is otherwise known only from Sind (Henderson), Karachi (Alcock), Bombay (Guérin) and Penang (Henderson).

***Macrophthalmus transversus* (Latreille).**

(Plate xxiv, fig. 1.)

1915. *Macrophthalmus transversus*, Tesch, Zool. Meded. Mus. Leiden, I, p. 158, pl. v, fig. 1 (*ubi lit.*).

This species is not mentioned by Alcock in his account of the Indian species; it was, however, recorded from Pondicherry by Milne-Edwards and has recently been found in great abundance by Dr. F. H. Gravely on the coast of Orissa.

The specimens agree well with the excellent figures published by Milne-Edwards in Cuvier's *Règne Animal*¹ and also, in most respects, with Tesch's figures and detailed description. The eyes are variable in length; sometimes they reach beyond the tip of the orbital tooth by only half the length of the cornea, sometimes by fully twice its length. In none of the specimens I have seen are they quite so long as shown in Tesch's figure. The differences noted by Tesch in the granulation of the carapace are undoubtedly sexual; in females the greater part of the surface is smooth and glossy, whereas in males it is closely covered with small granules.

In his description of the male cheliped Tesch notes that the lower surface of the palm is bordered by two parallel serrated crests, but only one is visible in the specimens I have seen. The palm as a whole (fig. 1) is more slender than in the figure and the fingers more strongly deflexed: when the claw is closed the dactylus is at right angles to the main axis of the palm. Tesch remarks that a part of the palm at the insertion of the movable finger "seems to be detached, so as to form a separate joint, but the suture separating this part from the rest of the palm is not continued on the inner surface." I think the appearance of a separate segment must be due to a partial fracture; I can find nothing resembling it in any of the specimens I have examined. The dactylus differs from the description in bearing a large molar tooth near the base², directed slightly backwards, and another which is much smaller in the distal third, fitting close behind the foremost tooth on the fixed finger. Between these larger teeth there is a series of denticles.

The specimens are smaller than those seen by Tesch. In the largest male the carapace is 9·4 mm. in length and 22 mm. in breadth, the length of the chela being 15 mm.

^{9.8 2.2-2.6}
10 Chandipur, near Balasore, Orissa. F. H. Gravely. Many.

M. transversus has been recorded from Massouah (Cano), Pondicherry (Milne-Edwards) and Sumatra (de Man, Tesch).

¹ Pl. xvi, figs. 2, 2a-d.

² Obscurely shown on the left-hand chela in Milne-Edwards' figure.

***Macrophthalmus telescopicus* (Owen).**

(Plate xxiv, figs. 10, 11.)

1900. *Macrophthalmus verrauxi*, Alcock, *Journ. Asiatic Soc. Bengal*, LXIX,

p. 377.

1915. *Macrophthalmus telescopicus*, Tesch, *Zool. Meded. Mus. Leiden*, I, p. 161, pl. v, fig. 2.

I accept Tesch's views on the synonymy of this species as a temporary measure, but further work is necessary before his conclusions can be accepted as final. The species, as understood by Tesch, is one of extremely wide distribution and it is quite possible that two or more allied forms may be confounded. Comparison of specimens from Australia, the Hawaiian Is. and the Red Sea is a necessary step to further progress.

The material at my disposal is very limited, but the three males in which the chelipeds are extant differ considerably from one another.

In a male from Port Blair in the Andamans (one of those examined by Alcock), with carapace 4·2 mm. in length and 6·7 mm. in breadth, the fine keel on the outer face of the palm (fig. 11) near its lower border is decidedly sinuous and the fingers, as in Miss Rathbun's figure¹, gape very widely at the base. There is a small molariform tooth at the proximal end of the dactylus and another, in the form of a crest truncated anteriorly, near the tip of the fixed finger. The teeth on the lateral margin of the carapace behind the orbital tooth are blunt.

In a larger male, also from Port Blair, with carapace 15 mm. in breadth and 9 mm. in length, the chela is of the same type, but the keel on the outer face of the palm is a little straighter. The lateral teeth of the carapace, behind the orbital angle, are sharp and the meral segments of the first walking legs (which have been lost in the smaller specimen) bear a dense patch of fur on the underside.

A male from the northern end of the Gulf of Manaar, with carapace 7·8 mm. in length and 12·4 mm. in breadth, has sharp lateral teeth on the carapace and no furry patch on the lower side of the merus of the first walking legs. The keel on the outer face of the palm is much less sinuous in this specimen (fig. 10), the fingers do not gape, the tooth on the fixed finger is longer and a little more remote from the apex, while the molariform tooth on the dactylus is longer and broader and situated more nearly in the middle of the finger length. In this individual the terminal segment of the abdomen is proportionately broader than in those from Port Blair.

From the material at my disposal I am not able to decide whether the differences in these males are specific or merely a matter of variation.

¹ *K. Danske Vidensk. Selsk. Skrift.* (7), *naturvid. og math.*, V, p. 322, text-fig. 6 (1910).

In none of the specimens I have seen is the propodus of the last leg dilated as in Borradaile's *M. latipes*.¹

Alcock recorded this species from the Andamans and Mergui; additional specimens are from the following localities:—

$\frac{9.8}{10} 2.0$	Tor, Sinaitic Peninsula, Red Sea.	R. B. S. Sewell.	One ♀.
$\frac{9.8}{10} 2.1$	Backwater at Pamban, Ramnad Dist., G. of Manaar.	S. Kemp. ‘Investigator.’	One ♂. Two ♀. (damaged).
$\frac{8.5}{10} 1.0$	Fisher Bay, Port Owen, Tavoy I.		

Macrophthalmus sulcatus, Milne-Edwards.

(Plate xxiv, figs. 3-5).

1900. *Macrophthalmus sulcatus*, Alcock, *Journ. Asiatic Soc. Bengal*, LXIX, p. 379.

1915. *Macrophthalmus sulcatus*, Tesch, *Zool. Meded. Mus. Leiden*, 1, p. 165.

The only specimens in the collection are the male and female examined by Alcock. They differ rather conspicuously in the form of the orbital and antero-lateral teeth. In the female the orbital tooth is shorter than in the male and is separated from the first lateral tooth by a comparatively wide gap (fig. 4). In the male the orbital tooth is curved backwards and upwards, slightly overlapping the margin of the first lateral tooth (fig. 5). The form of the male chela is shown in fig. 3.

I have compared these specimens with an example of the very closely allied *M. grandidieri*, A. Milne-Edwards, from the Red Sea. The differences between the two species have been tabulated by Lenz.²

Alcock by a *lapsus calami* states that the Indian examples of this species were obtained in the Andaman Is. They are in reality from Kutch. The species is otherwise only known from Mauritius (Milne-Edwards) and Australia (Ortmann); the latter locality is almost certainly erroneous.

Macrophthalmus brevis (Herbst).

Macrophthalmus carinimanus, auct.

1915. *Macrophthalmus brevis*, Tesch, *Zool. Meded. Mus. Leiden*, 1, p. 169, pl. vi, fig. 5 (*ubi. lit.*).

Tesch has shown that the name *M. brevis* must be employed for the species hitherto known as *M. carinimanus*. It was recorded by Milne-Edwards under the latter name from Pondicherry, but it is only within the last few years that it has again been found in Indian waters.

$\frac{9.8}{10} 2.8$ Paway I., Mergui Archipelago. ‘Investigator.’ Five.

The species is known from Mauritius (Milne-Edwards), Pondicherry (Milne-Edwards), Singapore (Gray), Halmahera (de Man) and Celebes (de Man).

¹ *Faun. Geogr. Maldives Laccadives*, 1, p. 433, fig. 114 (1903).

² Lenz, *Abhandl. Senckenb. Ges. Frankfurt*, XXVII, p. 366 (1905).

***Macrophthalmus convexus*, Stimpson.**

(Plate xxiv, fig. 2.)

1900. *Macrophthalmus convexus* Alcock, *Journ. Asiat. Soc. Bengal*, L.XIX, p. 378.

1915. *Macrophthalmus convexus*, Tesch, *Zool. Meded. Mus. Leiden*, I, p. 175, pl. viii, fig. 8.

A large male from the upper end of the Gulf of Manaar is referred with considerable doubt to this species, for it differs widely from all other adult specimens of the same sex that I have seen in the form of the chelae (fig. 2).

In normal males from Indian waters the chela agrees exactly with the figure of *M. inermis* published by A. Milne-Edwards in 1873¹, *M. inermis* being regarded by most authorities as a synonym of *M. convexus*. In the abnormal male from the Gulf of Manaar the form is altogether different, resembling that of females and very young males.

The chela in this specimen is about $2\frac{1}{2}$ times as long as the height at the base of the fingers and the dorsal edge of the palm bears a double row of small tubercles not seen in normal males. The outer surface is minutely granulate in its upper part; but lower down, above the strong serrate carina that runs from the base to the tip of the fixed finger, it is concave and perfectly smooth. In normal males the fingers and a small portion of the palm in the vicinity of the finger-cleft are clothed with hair internally, but in this specimen the hairy covering extends over practically the whole of the inner surface. The prehensile edges bear only rudiments of the large teeth found in normal males and the fixed finger is scarcely at all deflexed. The chela differs from that of the female in only two points,—in the possession of rudimentary teeth on the fingers and in the hairy covering of the inner surface.

In all other respects the specimen agrees precisely with normal examples of the species. It is, however, unusually large, the breadth of the carapace being 32·5 mm. and the length 16·5 mm. An ovigerous female found with this male is 23·1 mm. in breadth and 12·2 mm. in length; it is as nearly as possible identical with other females taken in company with normal males.

It is difficult to come to any satisfactory conclusion regarding the identity of these two specimens; I believe, however, that they are to be referred to *M. convexus* (= *M. inermis*). The abnormal character of the chelae of the male is perhaps to be explained by regeneration; but, if so, the original chelipeds must both have been lost at the same time and at a very early age.

Tesch has followed de Man and Alcock in regarding *M. inermis* as a synonym of *M. convexus*. Miss Rathbun considers them distinct and has noted various points of difference, but I am not at all certain that the statements are derived from actual comparison of specimens. It appears probable that the informa-

¹ A. Milne-Edwards, *Nouv. Arch. Mus. Hist. Nat. Paris*, IX, p. 277, pl. xii, fig. 5 (1873).

tion regarding *M. convexus* was derived from the posthumous work of Stimpson, then unpublished. Perhaps Miss Rathbun has since changed her opinion on the subject, for if the two species are distinct the specimen from the Gulf of Siam recorded by her as *M. convexus* should have been referred to *M. inermis*.

Stimpson described *M. convexus* from a young specimen with carapace '34 ins. in length and '59 ins. in breadth. I have examined a still smaller individual from the Andamans in which the carapace is 6·5 mm. in length and 11·4 mm. in breadth. Except that the tooth on the merus of the last legs is absent, this specimen is in almost exact agreement with Stimpson's description and figures. I am convinced that it is an example of *M. convexus* and that this species is based on a young specimen of *M. inermis*.

Alcock recorded specimens from the Andamans; additional records are:—

⁹⁸²⁹ ₁₀	Jack and Una Is., Mergui Archipelago	'Investigator.'	One.
⁹⁸³⁰ ₁₀	Pamban, Ramnad dist., Gulf of Manaar.	S. Kemp.	Two.

The Gulf of Manaar is the most western locality from which the species has been recorded. Eastwards it extends to Australia, Samoa, the Loo Choo Is. and the Hawaiian Is.

Macrophthalmus erato, de Man.

1898. *Macrophthalmus erato*, Koelbel, *Wiss. Ergebn. Reise Grafen Béla Széchenyi in Ostasien*, II, p. 576, pl. i, figs. 13, 14.
 1900. *Macrophthalmus erato*, Alcock, *Journ. Asiatic. Soc. Bengal*, LXIX, p. 381.
 1915. *Macrophthalmus erato*, Tesch, *Zool. Meded. Mus. Leiden*, I, p. 179, pl. viii, fig. o.

This species was recorded by de Man and Alcock from the Mergui Archipelago and Akyab; it has since been found at the following localities:—

⁹⁸³³⁻⁴ ₁₀	Chandipur, near Balasore, Orissa.	F. H. Gravely.	Many.
³⁷¹⁵ ₁₀	Arakan coast.	'Investigator.'	One.
⁹¹⁸¹ ₁₀	Fisher Bay, Port Owen, Tavoy.	"	Three.
⁹⁸³¹ ₁₀	Jack and Una Is., Mergui Archipelago	"	Eleven.
⁹⁸³² ₁₀	Parker I., Mergui Archipelago	"	Two.

The specimen from the Arakan coast is exceptionally large; the carapace is 17·4 mm. in breadth and 11·9 mm. in length.

Outside the Bay of Bengal *M. erato* is known from Malacca (de Man), the Gulf of Siam (Rathbun), Madoera near Java (Tesch) and Hongkong (Koelbel).

Macrophthalmus crinitus, Rathbun.

(Plate xxiv, fig. 7.)

1915. *Macrophthalmus crinitus*, Tesch, *Zool. Meded. Mus. Leiden*, I, p. 192.

Four small specimens from the Mergui Archipelago and Singapore belong to this species. The largest male is 6·9 mm. in length and 9·0 mm. in greatest breadth of carapace.

M. crinitus, as Tesch has observed, is much more nearly related to *M. bosci* than to *M. pacificus*, with which Miss Rathbun compared it. I have examined a good series of *M. bosci* from the Red Sea and find that the two species are to be distinguished by the following characters :—

M. crinitus, Rathbun (fig. 7).
 Carapace widest behind tip of first antero-lateral tooth, less strongly areolated.
 Orbital teeth not very sharp, their outer margins parallel.
 Third tooth¹ of antero-lateral border of carapace distinct.
 Granulate crest on outer surface of palm of male conspicuous.

M. bosci, Sav. & Aud. (fig. 6).
 Carapace widest between tips of orbital teeth, more strongly areolated.
 Orbital teeth very sharp, their outer margins posteriorly convergent.
 Third tooth¹ of antero-lateral border of carapace practically invisible.
 Granulate crest on outer surface of palm of male exceedingly faint.

Tesch is mistaken in supposing that the species differ in the form of the third maxillipeds.

$\frac{9838}{10}$	Paway I., Mergui Archipelago.	'Investigator.'	Three.
$\frac{9839}{10}$	Tanah Merah Besar, Singapore.	N. Annandale.	One.

M. crinitus has been recorded only from Halmahera (de Man) and Amboina (Rathbun). *M. bosci*, though described from the Red Sea and since reported from the E. coast of Africa, Malaysia and Oceania, has not yet been discovered in Indian waters.

Macrophthalmus pacificus, Dana.

1915. *Macrophthalmus pacificus*, Tesch, Zool. Meded. Mus. Leiden, I, p. 190, pl. viii, fig. 11.

Thirteen specimens from Portuguese India belong to this species; in the largest, which is a female, the carapace is 12·8 mm. in length and 18·7 mm. in greatest breadth. I have compared these individuals with a rather larger male from Australia, obtained many years ago from the Queensland Museum, and am unable to find any difference between them.

Heller's *M. bicarinatus* from the Nicobars is almost certainly synonymous with this species.

$\frac{9840}{10}$	Nova Goa, Portuguese India.	S. Kemp.	Four.
$\frac{9869}{10}$	Rachol R., opposite Durbate, Portuguese India	S. Kemp.	Nine.
$\frac{9870}{9}$	Australia.	Queensland Mus.	One.

The specimens from Portuguese India were found in brackish water, under stones on the banks of the Mapusa and Rachol Rivers.

The species is known from the Nicobars (Heller), Penang and Pontianak (de Man), the Loo Choo Is. (Stimpson), Upolu and Samoa (Dana).

¹ Including the orbital tooth.

***Macrophthalmus tomentosus*, Eydoux & Souleyet.**

1915. *Macrophthalmus tomentosus*, Tesch, Zool. Meded. Mus. Leiden, I, p. 193, pl. ix, fig. 12.

The only recent example of this species that I have seen is that recorded by Alcock from the Mergui Archipelago. There are, however, ten fossil or subfossil specimens labelled 'Sandoway,' a locality on the Arakan coast of Burma.

The latter specimens have been preserved in mud and have evidently undergone considerable vertical pressure. The upper and lower surfaces of the carapace have been partially crushed together, frequently without causing any considerable distortion, and the eyestalks and terminal segments of the legs have been broken off. The tuberculation of the upper surface is exceedingly well preserved.

By softening the mud with water and by working at it with a stiff brush I have been able to develop out the specimens to some extent and to satisfy myself of their identity. They agree precisely with the spirit specimen from the Mergui Archipelago and though the chelae are invariably broken or absent, I have been able to find clear indications of the "musical crest" on the inner face of the merus.

M. tomentosus has not hitherto been found in the fossil state.

***Macrophthalmus depressus*, Rüppell.**

1900. *Macrophthalmus depressus*, Alcock, Journ. Asiatic Soc. Bengal, LXIX, p. 830 (part only).

1915. *Macro lthalmus depressus*, Tesch, Zool. Meded. Mus. Leiden., I, p. 196, pl. ix, fig. 13.

There appears to be some confusion about this species. Alcock records specimens from both Mergui and Aden, but in my opinion only those from the latter locality are true *M. depressus*. The Mergui specimens, which were also examined by de Man, and are labelled *M. depressus* in his handwriting, belong in reality to a closely allied undescribed form to which I have given the name *M. teschi*. The differences between the two species are explained overleaf.

$\frac{987}{10}$	Suez.	H. J. Walton.	Two.
$\frac{1913}{4}$	Aden.	J. Wood-Mason.	Seven.
$\frac{98+3}{10} \pm$	Pamban, Ramnad dist., Gulf of Manaar.	S. Kemp.	Many.

M. depressus has been recorded many times from the Red Sea and is also known from the Persian Gulf (Nobili), Bombay and Pondicherry (Guérin) and Rameswaram I. (Henderson). Haswell's record from Australia (under the name *M. affinis*) is almost certainly erroneous. The two specimens from Mergui examined by de Man belong to *M. teschi* and the single female recorded by the same author from Atjeh is probably also to be referred to that species.

***Macrophthalmus teschi*, sp. nov.**

(Plate xxiv, figs 8, 9.)

1888. *Macrophthalmus depressus*, de Man, *Journ. Linn. Soc. Zool.*, XXII, p. 124 (? all).
? 1895. *Macrophthalmus depressus*, de Man, *Zool. Jahrb. Syst.*, VIII, p. 578.
1900. *Macrophthalmus depressus*, Alcock, *Journ. Asiatic Soc. Bengal*, LXIX, p. 380 (in part).

This species is very closely allied to *M. depressus*; males differ only in the following particulars:—

M. teschi, sp. nov.

Granulation of lateral parts of carapace sparse, the interspaces between the granules being much greater than the diameter of the granules.

The transverse row of granules extending inwards from the posterior antero-lateral tooth of the carapace is conspicuous.

Lateral and frontal edges of rostrum crenulate.

Upper border of palm of cheliped without large granules; lower surface conspicuously granular proximally.

Fixed finger of chela strongly deflexed with a very large tooth on its prehensile edge not reaching beyond the middle of its length (fig. 8).

Sternum granular only near abdomen, quite smooth externally.

From *M. japonicus*, de Haan, with which I have also compared it, *M. teschi* may be distinguished by the following characters,— (i) the orbital borders are less oblique, (ii) the upper orbital border is finely crenulate and the lower serrate (in *M. japonicus* both are finely serrate), (iii) the antero-lateral margins are finely crenulate (rather coarsely tuberculate in *M. japonicus*), (iv) the palm is smooth dorsally and does not possess the row of granules found in *M. japonicus* on the upper part of the inner surface, (v) the whole inner surface of the chela, including the fingers, is densely clothed with hair, (vi) there are no spinules on the upper border of the dactylus of the chela, (vii) the posterior borders of the meropodites of the walking legs are finely crenulate, without the blunt spinules seen in *M. japonicus*.

In *M. definitus*, Adams and White, which I have not seen, the carapace is proportionately broader, the length being three quarters the greatest breadth; the central portions of the carapace are smoother and there is a granular line, anteriorly convex, on each epigastric lobe. Moreover, the upper border of the palm is coarsely granulate in this species and there is a transverse ridge on the third abdominal segment.

M. depressus, Rüppell.

Granulation of lateral parts of carapace close, the interspaces between the granules being little if at all greater than the diameter of the granules.

The transverse row of granules extending inwards from the posterior antero-lateral tooth of the carapace is inconspicuous, being lost in the close granulation of the adjacent parts.

Edges of rostrum not crenulate.

Upper border of palm of cheliped with a row of large granules; lower surface quite smooth¹.

Fixed finger of chela very slightly deflexed with a low crest on its prehensile edge reaching beyond the middle of its length.

Sternum finely granular throughout.

¹ Except for an exceedingly fine frosting only visible with a powerful lens, the surface is quite smooth to the touch.

I have seen no females of *M. teschi*; four males yield the following measurements (in mm.) :—

		Length of carapace.	Greatest breadth of carapace.
Port Canning	13·9	22·7
Arakan Coast	14·1	22·9
Mergui	{ 14·9 14·2	22·7 21·7

It will be noticed that in the specimens from Mergui the carapace is proportionately a little longer than in the others.

The specimens examined are from the northern and eastern sides of the Bay of Bengal. The geographical distribution of the species appears therefore to be different to that of *M. depressus* which extends from the Red Sea to the Gulf of Manaar.

$\frac{98\pm 2}{10}$	Port Canning, Gangetic delta.	Bengal Fishery Dept. (B. Prashad).	One. TYPE.
$\frac{37\pm 1}{10}$	Arakan coast.	'Investigator.'	One.
$\frac{81\pm 8}{6}$	Mergui.	Mus. Collr.	Two.

Macrophthalmus gastrodes, Kemp.

1915. *Macrophthalmus gastrodes*, Kemp, Mem. Ind. Mus., V, p. 228, pl. xii, fig. 5.

This species, described contemporaneously with the publication of Tesch's monograph, differs widely from all other members of the genus in the great proportionate length of the carapace and its very strongly divergent lateral margins. It is known only from two specimens obtained in water of variable salinity near the mouth of the Chilka Lake in Orissa.